AMENDMENT TO THE CLAIMS:

This listing of claims will replace all prior versions of claims in the application:

LISTING OF CLAIMS:

1. (CURRENTLY AMENDED) A magnetic disk protection mechanism, comprising:

an information acquisition mechanism for acquiring current information about an environmental change of a magnetic disk device;

a shock prediction mechanism for analyzing the current information acquired by said information acquisition mechanism together with a history thereof occurring immediately prior to the current information, and for determining a status of where said magnetic disk device is used, so as to perform a shock prediction; and

a control mechanism for controlling operations of said magnetic disk device including a magnetic head escape operation based on a prediction result by said shock prediction mechanism.

2. (CURRENTLY AMENDED) The magnetic disk protection mechanism according to claim 1, wherein the history analyzed is longer than an anticipated time required for a fall, wherein if a variation in the status where said magnetic disk device is used falls within a specified range for a specified period, said shock prediction mechanism does not predict that a shock will be caused by the variation in the status.

3. (ORIGINAL) The magnetic disk protection mechanism according to claim 1, wherein if the status of where said magnetic disk device is used varies in a

predetermined pattern, said shock prediction mechanism predicts that a shock will be caused by the variation in the status.

4. (CURRENTLY AMENDED) The magnetic disk protection mechanism according to claim 1, wherein said shock prediction mechanism predicts a shock with reference to a history of input operations provided by a predetermined input device, wherein said input device is selected from a keyboard and a mouse coupled to a computer system which is in communication with the magnetic disk device.

5. (ORIGINAL) The magnetic disk protection mechanism according to claim 1, wherein said information acquiring mechanism acquires information on acceleration of said magnetic disk device, and said shock prediction mechanism recognizes the status where the magnetic disk device is used based on the acceleration information acquired by said information acquiring mechanism.

6. (PREVIOUSLY PRESENTED) The magnetic disk protection mechanism according to claim 1, wherein if said shock prediction mechanism determines that said magnetic disk device is stable, the shock prediction mechanism notifies said control mechanism that said magnetic disk device is stable, and said control mechanism returns said escaping magnetic head in response to said notification, wherein said shock prediction mechanism adaptively determines whether or not said magnetic disk device is stable, based on a history of the information acquired by said information acquiring mechanism before a shock is predicted to occur.

7. (PREVIOUSLY PRESENTED) The magnetic disk protection mechanism according to claim 1, wherein said information acquisition mechanism is coupled to a housing in which the magnetic disk device is housed.

8. (ORIGINAL) The magnetic disk protection mechanism according to claim 1, wherein if said magnetic head has escaped, said control mechanism holds a new access request to the magnetic disk device in an internal queue instead of realizing the access request until said shock prediction mechanism determines that said magnetic disk device is stable.

9. (ORIGINAL) A magnetic disk protection mechanism, comprising:

a status determination mechanism for determining a status of where said magnetic disk device is used; and

a control mechanism for controlling operations of said magnetic disk device including a magnetic head escape operation based on a determination result by said status determination mechanism,

wherein, when said status determination mechanism determines that there is a high probability of excessive shock to said magnetic disk device, said control mechanism divides an access request to said magnetic disk device into access requests with a small data size per access and transmits the access request to said magnetic disk device.

10. (ORIGINAL) The magnetic disk protection mechanism according to claim 9, wherein if said magnetic head escapes before at least some of said access requests obtained by the division are realized, said control mechanism saves the access requests that have not been realized yet and realizes these requests after returning said magnetic head.

11. (ORIGINAL) The magnetic disk protection mechanism according to claim 9, wherein, instead of said control mechanism dividing an access request to said magnetic disk device into access requests with a small data size per access and transmitting the access request to said magnetic disk device, said control

mechanism invalidates a write cache function that performs an access to a magnetic disk in said magnetic disk device when said status determination mechanism determines that there is a high probability of excessive shock to said magnetic disk device.

12. (ORIGINAL) The magnetic disk protection mechanism according to claim 11, wherein, instead of said control mechanism invalidating a write cache function that performs an access to a magnetic disk in said magnetic disk device, for each data writing in a cache memory, said control mechanism writes said data to a magnetic disk so as to empty said cache memory.

13. (PREVIOUSLY PRESENTED) A magnetic disk protection mechanism, comprising:

a shock prediction mechanism for predicting a possible shock to a magnetic disk device, based on a variation in at least one physical parameter of an environment of the magnetic disk device;

a control mechanism for controlling operations of said magnetic disk device including a magnetic head escape operation based on a prediction result by said shock prediction mechanism; and

a diagnosis mechanism for operating if a shock actually occurs after said control mechanism has started causing a magnetic head to escape, to determine whether or not the magnetic head has escaped before the occurrence of the shock,

wherein said diagnosis mechanism makes said determination by comparing a pre-shock period, that is a time from a start of an escape operation of the magnetic head until the occurrence of a shock, with an already measured and restored escape time required for the escape operation of the magnetic head.

14. (CANCELED)

15. (PREVIOUSLY PRESENTED) The magnetic disk protection mechanism according to claim 13, wherein if the magnetic head has already escaped before the magnetic head starts an escape operation under the control of said control mechanism, said diagnosis mechanism does not compare said pre-shock period with said escape time but determines that the magnetic head has completely escaped before the occurrence of said shock.

16. (ORIGINAL) The magnetic disk protection mechanism according to claim 15, wherein if said control mechanism issues a request command requesting performance of an escape operation under the control of said control mechanism and then within a specified time, acquires a notification indicating that the command has been completed, then said diagnosis mechanism determines that the magnetic head had already escaped when the magnetic head started an escape operation.

17. (ORIGINAL) A computer system comprising a magnetic disk device, said computer system further comprising:

an acceleration sensor for detecting an acceleration of a housing coupled to said magnetic disk device;

a shock manager for analyzing acceleration information acquired by said acceleration sensor and a history thereof, to predict a probability of shock to said magnetic disk device; and

a driver for controlling said magnetic disk device operation including a disk head escape operation based on a prediction result by said shock manager.

18. (CURRENTLY AMENDED) The computer system according to claim 17, further comprising a diagnosis processing section for operating if a shock actually occurs after said driver has started causing a magnetic head to escape, to determine whether or not the ~~the~~ magnetic head has escaped before the occurrence of the shock.

19. (ORIGINAL) The computer system according to claim 18, wherein if said diagnosis processing section determines that a shock occurred before the magnetic head escape was completed, said diagnosis processing section provides a user notification warning a user that a fault may have occurred in the magnetic disk device.

20. (ORIGINAL) A computer system comprising a magnetic disk device, said computer system further comprising:

a shock manager for determining a status where a housing of said shock manager is used to predict a shock to said magnetic disk device; and

a driver for dividing an access request to said magnetic disk device into access requests with a small data size per access and for transmitting to said magnetic disk device when said shock manager finds a high possibility of excessive shock to said magnetic disk device.

21. (ORIGINAL) The computer system according to claim 20, wherein the driver, instead of dividing an access request to said magnetic disk device into access requests with a small data size per access and for transmitting to said magnetic disk device, invalidates a write cache function that performs an access to a magnetic disk of said magnetic disk device when said shock manager finds a high possibility of excessive shock to said magnetic disk device.

22. (CURRENTLY AMENDED) A magnetic disk protection method of protecting a magnetic disk by using a sensor to determine a status where a magnetic disk device is used and by having a magnetic head escape depending on a determination result, said magnetic disk protection method comprising:

accumulating ~~information histories~~ acceleration information acquired by said sensor for a specified period of time,

analyzing the ~~accumulated histories and the latest said information~~ acceleration information and a history thereof to recognize a change pattern of said magnetic disk device status, and

based on a content of said change of said magnetic disk device status, predicting a probability of shock to said magnetic disk drive and executing a magnetic head escape operation when a shock to said magnetic disk device is predicted.

23. (ORIGINAL) A magnetic disk protection method of protecting a magnetic disk by using a sensor to determine a status where a magnetic disk device is used and by having a magnetic head escape depending on a determination result, said magnetic disk protection method comprising:

based on an output by said sensor, determining a status of where said magnetic disk device is used;

controlling operations of division of an access request to said magnetic disk device into access requests with a small data size per access and of transmission to said magnetic disk device when a high possibility of excessive shock to said magnetic disk device is predicted; and

executing a magnetic head escape operation when a shock to said magnetic disk device is found.

24. (ORIGINAL) The method according to claim 23, wherein instead of controlling operations of division of an access request to said magnetic disk device into

access requests with a small data size per access and of transmission to said magnetic disk device, operations to invalidate a write cache function that performs an access to a magnetic disk in said magnetic disk device are controlled when a high possibility of excessive shock to said magnetic disk device is found.

25. (ORIGINAL) The method according to claim 23, wherein instead of controlling operations of division of an access request to said magnetic disk device into access requests with a small data size per access and of transmission to said magnetic disk device, for each data writing in a cache memory, controlling an operation of writing of data to a magnetic disk so as to empty said cache memory when a high possibility of excessive shock to said magnetic disk device is found.

26. (ORIGINAL) A magnetic disk prediction method of protecting a magnetic disk by using a sensor to determine a status of where said magnetic disk device is used and by having a magnetic head escape depending on a determination result, said magnetic disk prediction method comprising:

based on a variation in an environment of the magnetic disk device, predicting a possible shock to the magnetic disk device;

based on a result of said prediction, controlling operations of said magnetic disk device including a magnetic head escape operation; and

if a shock actually occurs after a magnetic head has started escaping, determining whether or not the magnetic head escape has been completed before the occurrence of the shock, by comparing a pre-shock period, that is a time from a start of an escape operation of the magnetic head until the occurrence of a shock, with an already measured and restored escape time required for the escape operation of the magnetic head.

27. (ORIGINAL) The method according to claim 26, wherein in the step of determining whether or not the magnetic head escape has been completed before the occurrence of said shock, if the magnetic head has already escaped before the magnetic head starts an escape operation, the comparison of said pre-shock period with said escape time is not carried out but it is determined that the magnetic head has completely escaped before the occurrence of said shock.

28. (CURRENTLY AMENDED) A program for controlling a computer to implement a magnetic disk device protection mechanism, comprising:

code for acquiring current information on an environmental change toward a magnetic disk device and storing the information in a predetermined storage mechanism;

code for analyzing said acquired information and a history of the information accumulated in said storage mechanism, the history being information acquired immediately prior to the current information, and for determining a status of where said magnetic disk device is used, so as to perform a shock prediction; and

code for controlling operations of said magnetic disk device including a magnetic head escape operation based on a result of said shock prediction.

29. (NEW) A magnetic disk protection mechanism, comprising:

an acceleration sensor for detecting an acceleration of a housing coupled to a magnetic disk device;

a shock manager for analyzing acceleration information acquired by said acceleration sensor and a history thereof, to predict a probability of shock to said magnetic disk device; and

a driver for controlling said magnetic disk device operation including a disk head escape operation based on a prediction result by said shock manager.